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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE.



October 16, 1937

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## DO YOU KNOW?

Keeping laying hens in cages has been tried experimentally.

Flavor of meat increases with the age of the animal, experiments indicate.

Glass textiles are being made both from staple-length glass and from continuous thread.

Quick-frozen vegetables take only a third to a half as long to cook as fresh vegetables require.

"Immunized cotton" is cotton which has been chemically treated to produce special waterproofing effects and dyeing properties.

Most college students study by poor light, or by light inadequate in some way, according to a survey at the University of Illinois.

An anatomist points out that we use our teeth less than three hours a day, but that early man probably ate whenever he could and kept his teeth much busier.

Knights fighting in tournaments sometimes wore gauntlets which could be locked around the grip of a sword or mace, so that the contestant could not be disarmed; but sometimes these locking gauntlets disqualified a knight from winning the prize.

Horses domesticated in Mesopotamia about 3000 B. C. were bigger than modern Arabian steeds.

It is being predicted that airplanes have reached their top speed, so far as commercial flying is concerned.

About six per cent of telephone calls get a "don't answer" response, judging by a check on New York's 8,000,000 daily calls.

Nearsighted children are likely to prefer reading books and playing indoors with toys, because of their poor sight for distant objects.

A check up on the progress of babies prematurely born shows that they usually catch up in development with other children, if they are healthy.

Japan plans to supply free radios to families of soldiers in China so that they can hear Japanese government broadcasts on the Chinese situation.

Chemists say that research has so improved wax emulsions that waterproofing fabrics by wax could be made much more effective than it is.

Adding one thirty-second of an inch to the average length of cotton staple means something like eight million dollars more annually to cotton growers.

## WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

## ARCHAEOLOGY

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Have you ever had lymphocytic choriomeningitis? p. 243.

Is infantile paralysis decreasing? p. 248.

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What single cause is the greatest human slayer? p. 244.

Will vaccine prevent colds? p. 244.

## RADIO—ASTRONOMY

How was communication affected by the recent sunspots? p. 248.

## SURGERY

How can a certain kind of deafness be cured? p. 251.

## TAXONOMY

Why do the names of insects end in -ptera? p. 255.

## PUBLIC HEALTH

# New Disease Is Reported; One Out of Five May Have It

## American Public Health Association Discusses Link Between Soot and Pneumonia, Prevention of Colds

A NEW disease, which may have affected as many as one out of every five adults in the country without their knowing what they had, came in for discussion at the meeting of the American Public Health Association in New York City.

The disease has the jaw-breaking name lymphocytic choriomeningitis. It is caused by a virus. In about half the cases it causes fever and symptoms similar to influenza. In the other half it affects the membranes that cover the brain and causes more severe symptoms, such as bad headaches, stiff neck, nausea and vomiting and even slight, temporary paralysis. So far, no death has been reported in a proved case of this disease.

It is difficult or impossible to distinguish this new disease by clinical means alone from another brain membrane inflammation, acute aseptic meningitis,

Drs. R. D. Baird and Thomas M. Rivers of the Hospital of the Rockefeller Institute for Medical Research pointed out at the meeting.

The disease was discovered and its virus isolated by Drs. Charles Armstrong and R. D. Lillie of the U. S. National Institute of Health. They found the virus while studying viruses from St. Louis encephalitis epidemic patients in 1934. Two years before this Commander Paul F. Dickens of the U. S. Navy Medical Corps had reported two cases of what looked like acute aseptic meningitis but which he thought might be another disease caused by a virus. Since then the virus has been recovered from patients and from monkeys, mice and other animals in this country, England and France.

Diagnosis of the disease, say Dr. Armstrong, Drs. Baird and Rivers and

others who have studied it, depends on examination of the spinal fluid and on a mouse protection test. This consists in mixing the patient's serum with the virus and injecting it into mice. If the patient had the disease, his blood would have antibodies in it that neutralize the virus. In that case the mouse would remain well. But if the mouse gets sick, it shows that the patient's blood had no virus-neutralizing antibodies, and therefore that he did not have lymphocytic choriomeningitis.

Dr. Armstrong and associates made this test on blood from nearly 2,000 well persons who were having routine blood tests for other reasons. They found that among the adults, almost 20 per cent. had neutralizing antibodies in their blood, although none (Turn next page)

## PHYSICS-MEDICINE

## Super-Voltage X-Ray Doses Can Now Be Standardized

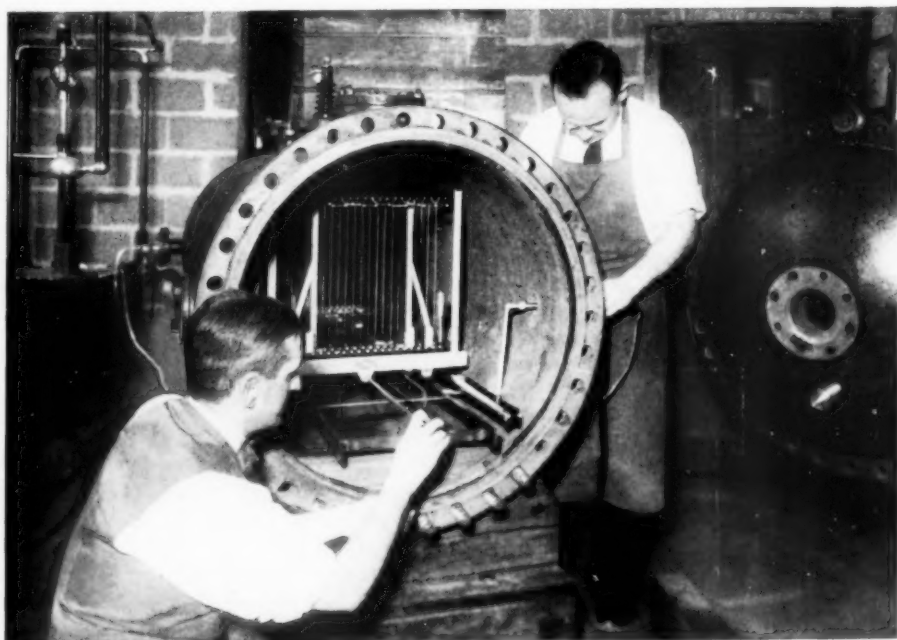
THE super-voltage X-rays used in treating deep-seated cancers can be accurately standardized for the first time, the U. S. Bureau of Standards has announced. Measurements up to 400,000 volts have been made for such standardization by two scientists of the Bureau's staffs, Dr. Lauriston S. Taylor and George Singer.

The significance of the work, Dr. Taylor told Science Service, is that it takes the "chance" out of previous work in the field of high-voltage X-ray therapy. Previous experimenters have used 400,000 volt X-ray without knowing, truly, what dosage they were administering. They obtained different results with the higher voltage rays but were unable to know whether the effect was due to the characteristics of the more piercing radiation or to inequalities in X-ray dosage. The new Bureau of Standards work permits dosages of radiation up to 400,000 volts to be known accurately for the first time. Previously 275,000 volts was "tops" for such calibration work.

To measure the rays, a tube of special design was constructed and one of the world's largest pressure X-ray ionization chambers (shown at left) was built.

This research was necessitated by the building and operation, within the last 3 years, of several dozen X-ray plants operating at the higher voltages. Previously X-rays generated by voltages up to 200,000 volts were used in treating cancer and other serious diseases.

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STANDARDIZING X-RAYS

Dr. Lauriston S. Taylor (left) and George Singer, Bureau of Standards experts, are shown with their machine for calibrating high-voltage X-ray machines. An ionization chamber is the core of the instrument which can measure for the first time voltages of 400,000. It takes the "chance" out of high voltage X-ray medical treatment.

of them recalled being sick with symptoms of any brain or nerve disease. This indicates that nearly one out of every five adults may have had the disease. The reason it has been missed in these patients is probably because when it does not affect the brain it behaves so much like influenza that it would be diagnosed as such.

In France Drs. P. Lepine, P. Mollaret and B. Kreis infected human guinea pigs with the virus of this disease. About half of them developed the brain inflammation symptoms while the other half had fever and symptoms of influenza.

### Homicide Worst Killer

The human slayer is the new enemy that health authorities were urged to battle in their peacetime fight against preventable death when Dr. R. N. Whitfield, of the Mississippi State Board of Health, addressed the meeting.

No invisible bacillus or virus, homicide in 1935 took more lives than the germs of typhoid fever, paratyphoid fever, typhus fever, undulant fever, smallpox, scarlet fever and diphtheria combined.

"We have more deaths now from accidents than from all the contagious and infectious diseases combined, excepting tuberculosis," said Dr. Whitfield.

"How much more dead is a boy or girl who has succumbed to typhoid fever or diphtheria than is another boy or girl who has been knocked to Kingdom Come by an automobile? Therefore I am convinced that state and city directors of vital statistics and statisticians in general should become deeply concerned with the figures that bear on preventable causes of death other than contagious and infectious diseases."

### Soot a Health Problem

A relation between pneumonia and soot in the air was reported by Dr. Samuel R. Haythorn and Harry B. Meller of Pittsburgh.

The studies were made to determine whether Pittsburgh's sooty air had any bearing, as might be suspected, on the city's high pneumonia death rate. The rate of pneumonia deaths in Pittsburgh is forty per cent higher than in the state of Pennsylvania.

The relation between the soot in the air and the amount of pneumonia is still not too clear. During the years of the depression, for example, when employment was low and economic conditions at their worst, there was a fall in the pneumonia death rate, but it is ris-

ing again with the return of industrial air pollution.

When, however, the scientists set about examining the amount of soot found in Pittsburghers' lungs after death and comparing this with the pneumonia records, they could find "nothing tangible to connect the pigment deposits with the high pneumonia incidence and high mortality rates."

More definite was the relation found between breathing sooty air and recovery from pneumonia. When a lot of soot gets into the lungs, enough to show signs of anthracosis (the lung disease caused by breathing sooty air and common among miners) pneumonia is more apt to heal by organization. This is a slower recovery than that which follows a crisis.

There was also more pneumonia in the groups where the lungs showed signs of most severe anthracosis. Since these groups were from occupations such as mining in which there was more exposure to coal dust and soot, it might seem that this proves that sooty air is a cause of pneumonia. But against this evidence has to be set the fact that the groups of severe anthracosis included not only those persons who had been exposed more to sooty air but also those in older age groups where pneumonia is more prevalent in non-sooty cities.

### Vaccines Reduce Cold's Severity

Persons liable to have colds make up about one-fourth of any group of people in industry or business, and it is these persons who constitute a year-round reservoir of common colds, Dr. Leverett D. Bristol, health director of the American Telephone and Telegraph Company, told members of the American Public Health Association.

Vaccinating against the common cold does not seem to reduce the number of colds, but lessens the severity and shortens the duration of each cold. This is apparent from experiences a number of industrial concerns have had over a period of years in which every effort was made to reduce colds and the time lost due to them by employees.

The probable reason, Dr. Bristol said, why the vaccines are not effective in cutting the number of colds is that there is no vaccine against the cause—probably a virus—of colds themselves. Vaccines help because they are effective against secondary bacterial infections which follow colds and make them worse.

The cold-prone persons, Dr. Bristol said, should be "strongly urged if not required" to seek the advice and treat-

ment of their family physicians in order to reduce the number of their colds to a minimum. Aside from helping themselves, they would cut down on the time they lose from work, and protect their fellow workers and other people they meet.

Dr. Bristol's advice to those who want to protect themselves against colds was:

Good health habits, proper ventilation, a daily diet including milk and plenty of fresh fruits and vegetables, extra nourishment through cod liver oil, attention to diseased sinuses, increased alkalization of the body and ultraviolet radiations, where needed.

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### INVENTION

## New Type of Speed-Boat Patented by Gar Wood

**G**AR WOOD, America's speedboat king whom Sir Malcolm Campbell stripped of the world speed record on water on Sept. 1, has been granted a patent on a new type of boat claimed to be faster than the conventional kind, it is reported by the U. S. Patent Office.

The new type of boat will literally ride on a layer of compressed air the papers for the patent (No. 2,086,593) reveal. Skin friction between the boat and the water, the biggest single factor slowing down present-day speedboats, is expected to be substantially cut by the new design.

Whether the invention is to be used in a new assault on the motorboat record, set at 126.325 miles per hour by Sir Malcolm, could not be immediately learned.

The speedboat has a tunnel the entire length of the hull built into its bottom. Ribs form air channels parallel to the tunnel. Air is forced into the channels by blowers geared to the engines. The air pushes the water away, preventing it from contacting the tops of the channels. The tunnel is so deep that when the boat is speeding through the water, the water does not touch its top.

The unusual design results in the boat actually traveling on a cushion of air when going at top speed. The new boat is of the "tractor" type, with its propeller in the bow of the boat.

Frequent new departures in motorboat design have followed Wood's consistent attempts during the past decade to better the speed record. The boat which held the record until recently was Miss America X, the tenth in a famous line of racing craft.

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SHIVA TEMPLE

*This photograph of the model of Grand Canyon in the American Museum of Natural History shows the approximate path taken by Dr. Anthony and his party of scientific alpinists from the North Rim of Grand Canyon over the narrow ridge of rock to the summit of Shiva Temple.*

GEOGRAPHY

## Scientist Describes Visit To Unknown Island in the Sky

Plateau in Grand Canyon Never Before Visited by White Man Contains Wild Life Isolated from Their Kind

By DR. HAROLD E. ANTHONY  
Leader, Shiva Temple "Lost World" Expedition.\*

See Front Cover

THE LAST man is down from Shiva Temple and today the Shiva Temple Expedition is another written chapter in the history of exploration and sciences. One of the few remaining blank spots on the biological map has disappeared.

More than 75 carefully prepared specimens from the top of the steep-sided mesa are on their way to the American Museum of Natural History in New York City for careful comparison and intensive study.

Near-tragedy and hilarious episodes both marked the expedition's course. We found convincing evidence also that someone else had tried to jump the

gun and beat us to the summit of Shiva. Water was always a problem, even the first day when an unlucky accident lost us a large part of our supplies.

A final scientific report will be necessarily somewhat delayed but it is possible now to sum up the trials and tribulations of a party working in an almost inaccessible region where no naturalist has ever been before.

No scientist wishes to commit himself before he has studied his material carefully. Hence when I say now that many of the animals we found atop the lonely sky island seemed to me to be paler than their cousins on either rim of the canyon, it is but a tentative statement, made with the knowledge that a change of opinion may be necessary.

It seems hardly possible that such a country as the United States would have

a blank spot on its biological map, that there are areas where nature has been left severely alone. But there they are, inviting conquest.

Word of these two sky islands—Shiva Temple and Wotan's Throne—first reached the Museum upwards of two years ago. An inquiry addressed to the Park Naturalist stationed at the Grand Canyon disclosed the fact that such areas really existed, and had been set aside as research areas where nature pursued its own course, unworried by the inroads of men.

### Never Climbed

As far as was known to the park personnel, these had never been climbed by a white man, and certainly had never been visited and studied by a naturalist.

Such a state of affairs was an instant challenge to the American Museum of Natural History which has launched an aggressive campaign to build up a complete collection of North American mammals.

To make a long story short, after months of preparation, the Museum party assembled on the South Rim of the Grand Canyon on Sept. 11. In this undertaking, they had the full cooperation of the park authorities and the unexpected competition of certain adventurous individuals who, hearing about Shiva, attempted to beat us to our goal.

Either an autogyro or a dirigible was at first considered the logical means of placing the personnel of the expedition on the isolated plateaus, which are situated about a mile from the North Rim and are surrounded by a natural moat of 1,000 to 5,000 feet of cliff and precipitous slope.

However, that idea had to be abandoned. The forests were too dense for the autogyro and the swirling air currents rising from the heated floor of the canyon threatened disaster to the dirigible. An extensive aerial survey, which also provided the Museum with photographs for a detailed study of local conditions, disclosed the necessity for scaling the sky islands afoot.

### The Long Way

So we decided to take the long and hard way, which meant crossing from the rim afoot and climbing from the base.

Walter A. Wood of the American Geographical Society, who has had extensive mountaineering experience, was in charge of the climbing party whose job was to establish the route and bring personnel onto the summit. Elliott Hum-

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phrey, who was injured in the assault on Shiva and had to drop out, was Wood's assistant. Mrs. Wood, who has accompanied her husband on previous expeditions, was also present.

The field party, the naturalists who were to do the collecting, were nineteen-year-old George B. Andrews, son of the director of the Museum, Dr. Roy Chapman Andrews, the famed discoverer of the world's oldest eggs, the dinosaur's eggs, and myself.

Miss Amy Andrews (no relative of Dr. Andrews) very generously volunteered her services as pilot and the use of her plane for expedition purposes. For even though we could not land members of the expedition from the air, we intended to use parachutes to drop food and water on the islands.

When we were discussing using the parachutes, little did I dream that we would be able to drop a dozen eggs on Shiva without breaking the shells or scrambling the yolks!

Photographer James B. Shackelford, because he was unable to bring his 275-pound colored motion picture equipment to the top, moved about from point to point on the North Rim and also used the plane extensively.

September 13 found our group one step nearer, on the North Rim, which thenceforth served as the central base. A hurried reconnaissance on the fourteenth took the mountain party almost to the summit of Shiva. Because of a late start, however, they returned, footsore and dead-tired, late at night. We had about concluded that they were bushed for the night somewhere out in the canyon.

First field camp was made on the North Rim on Sept. 15. The same day we pushed down onto the saddle of the ridge below Shiva. That night saw us prepared for a daybreak assault on the mesa.

### Signal Fire

With us that night were M. R. Tillotson, Park Superintendent; Edwin D. McKee, Park Naturalist; and Warren Hamilton, assistant superintendent.

We built a big bonfire the evening we spent on the saddle so that interested onlookers on the South Rim, eight or nine miles away in an airline, would know that we were knocking at the threshold of the canyon's mysteries.

Camp was astir at daybreak on the sixteenth, and we got to the top of Shiva Temple that day.

As we walked across the dark red sandstone of the Hermit Formation and

climbed up the steep slope of debris that has fallen from the cliffs above, we came upon a suggestive reminder of an attempt to beat us to our goal.

A neat coil of rope that apparently hadn't even been used for climbing, a small camera, and an alpenstock (hooked climbing staff used by mountaineers) lay in a pile on a rock—mute evidence that at this point the adventurer had lost his nerve. We even speculated whether we might discover more gruesome evidence as we clambered up the cliffs, but such was not the case.

We even appropriated this rope for our own use. We decided that it had been forfeited to the expedition.

A little further on we roped ourselves into two groups of four each. The forfeited rope came in handy as our own would have been enough for only one group, and we would have had to drop it down from the top to the second quartet.

The trip's only serious mishap happened to Humphrey, a member of the second group. The rope coiled around his middle knocked a rock off a ledge above him. The rock, although small, fell with sufficient force to cut through his hat and cut his scalp rather deeply.

### A Close Call

Almost stunned by the force of the blow, Humphrey had a close call. He almost fell off the cliff, with possible disastrous results to the other climbers roped to him.

Blood streamed down his face from the crown of his head when his hat was removed. Lack of water prevented us from making our first-aid measures a work of art. Humphrey did not finish the climb, remaining in the shade of a tree to rest up for the descent. All but the two who remained at the top returned that afternoon, taking Humphrey back with them. We needed no further warnings to keep a sharp eye out for rocks above. They are a constant menace on a cliff-side.

Soon after the accident we reached the end of the cliff pitch and the ropes were cast off as the climb was a bit easier. It was every man for himself up over the loose rock and occasional low cliff to the summit.

After a brief rest, we scattered about for a quick reconnaissance and eventually McKee and I picked as our settling point for the night a point on Shiva right opposite the ridge up which we had come. But we still had half of the day's surprises in store for us. We had less than a pint of water between



DR. HAROLD E. ANTHONY  
Leader of Shiva Temple Expedition

us when we sat down to await the arrival of our packers with supplies from below.

As packers I had engaged six young men from Kanab, a Mormon community just over the state line in Utah. These men were all accustomed to climbing over the Grand Canyon and cliffs held no terrors for them.

They had started out in the morning with bedding, water and enough provisions to last us until the parachutes went into action. It was expected that when they arrived at the foot of the cliffs, our party at the top would let down ropes to haul the duffle up.

### Trouble Below

We waited. The shadows that fill the canyon at sunset were creeping higher and higher up the great gorge's walls. But still no sign of activity from below. We went to a point on the mesa directly above the cliff where the packers were supposed to be at work and called down to discover if there was trouble below.

Indeed there was, for George Andrews called back mournfully:

"We've been having an awful time to get things to the top of the cliff. The packers have quit and gone back. Only one of 'em is here with me now. You two will have to come down and spend the night here."

I got the wrong impression that the packers had quit en masse and gone back to Kanab, which would have placed us in a fine predicament indeed. I

wanted to spend the night atop Shiva for our program called for building a signal fire to tell watchers on the South Rim that Shiva had been conquered.

McKee and I put our heads together a moment. He decided to go below to learn what had happened and whether it was not still possible to bring up the few things we would need to stay the night on the top.

In the meantime we were getting more and more thirsty, and the knowledge that there was only one small drink between us and no water at all served only to make us thirstier.

McKee disappeared down the slope. Just before dark he and George Andrews clambered up laden with beds, part of a canteen of water and a few battered cans of food.

### Bouncing Cans

It was then that I learned the cause of our trouble and the story of the bouncing cans.

A fifty-pound sack of provisions had been started up from the base of the cliff, but when well up into the air had burst and everything in it had cascaded down over the crags. Bottles and stone jars were a total loss. But a number of cans of such stuff as beans, peas and corn were still intact, if somewhat dented.

The porters had spent precious time climbing around to retrieve the scattered tins and finally everyone became so tired that they had to call it a day. The

packers had not quit, but had merely gone back to the base camp for the night.

I had done them an injustice in supposing that they would quit under fire. They subsequently proved cheerful and willing under every circumstance. George Andrews himself, who had worked like a Trojan all afternoon, had become so exhausted that it seemed to him only logical that we should all spend the night on top of the Coconino rather than to use any of his remaining energy to stagger up to the top.

However, after he had rested, drunk a little and had something to eat, he recuperated rapidly, and the outlook was far more cheerful to all of us.

As soon as full darkness had set in we three—McKee, Andrews and I—followed the rim of Shiva around to the south face until we reached an open spot where we could see the lights of El Tovar, the lodge on the South Rim. Here we piled up dry juniper and pinon pine and soon had a roaring signal fire.

Shiva Temple was at last on the scientific map.

### Life Changing Slowly

A picture of life changing slowly, very slowly, but changing none the less, will probably emerge from the ten days George Andrews and I spent as kings of all we surveyed atop a plateau that has, for many of the animals to be found on top, been to all intents and purposes cut off for some 20,000 years from the world outside.

Ten days of exploring its 300-acre plateau, trapping the small animals with which it is plentifully provided, shooting at its variety of chipmunk and cottontail rabbit, will serve as soon as we have had opportunity to study our specimens, to paint in detailed form the picture. But now we can draw the broad outlines of one of nature's canvases.

Twelve species of mammals which we noted either as resident throughout the year or as possible visitors may be listed as follows:

Chipmunk, cottontail rabbit, porcupine, two species of wood rats, rock squirrel, three and possibly a fourth species of white-footed or deer mice, black-tailed deer, coyote, ring-tailed cat and probably the cougar or mountain lion.

Some of these, such as the deer, more able climbers indeed than man, come up to the top only during the winter. Evidence of their visits was found in the form of antlers, which are known to

be cast only during January and February. But the smaller animals are there the year around and are effectively kept separated from their mainland cousins by the isolation of Shiva Temple and by the fact that any invaders would have to pass through a bitterly hostile environment to reach the mesa.

The world in which they live is warmer than the adjacent North Rim. It is drier. Although I did not take a series of thermometer readings and have only my personal reaction to guide me, I believe that Shiva is warmer. There was frost on the North Rim during our stay at Shiva, but none on the sky island.

### Semi-Desert Vegetation

Cactus is abundant on the mesa, much more abundant than on the adjacent North Rim. The pale coloring which we noted, marked for example on the Shiva chipmunk by the almost complete loss of all his stripes except for the black one down the middle of his back, is in keeping with the semi-desert character of the vegetation.

It can readily be shown that the darkest colored mammals are found in the regions of heavy rainfall, prolific vegetation and generally dark background. The paler colored ones are found in the deserts or open areas where there is a flood of sunlight and a generally light background. Consequently I was prepared to find a corresponding paleness in the coloring of Shiva mammals.

Pueblo Indians once were accustomed to visit Shiva but have probably not been atop the butte since the day when the Spanish Conquistadores reached Arizona. Ample evidence of their visits was found.

The Kaibab limestone which caps Shiva is the source of numerous flint nodules and these were the source of the Indians' weapons and tools. We found flint scrapers, arrowheads, spear points and numerous chips fashioned by Indian hands.

Remains of stone ovens set up by the Indians to bake or roast the starchy center of the century plant or "mescal," which grows abundantly here, were among our finds. Potsherds, broken bits of Indian pottery, were to be found about these "yant ovens," as they are known locally.

Weather throughout the year is probably generally fair. Except for the three days of intermittent thunder showers, which an oldtimer would term an equinoctial storm, the skies were bright and clear. We were fur- (Turn to page 252)



### PLENTIFUL

Such rodents as this little squirrel, found frequently on both rims of the canyon were also plentiful at Shiva Temple.

## PUBLIC HEALTH

**"Creeping Death" Epidemic In Japan May Be Cholera**

THE "CREEPING death" epidemic which is reported to have taken nearly 300 lives and caused illness of about 6,000 persons in Fukuoka Province in southern Japan is none other than cholera, in the opinion of U. S. Public Health Service officials.

The very name which has popularly been given the disease, "creeping death," is characteristic of cholera, it was pointed out.

"Cholera sneaks up on people and kills them overnight," Dr. C. L. Williams, chief of the foreign quarantine division of the federal health service, said.

Reports of 32 cases of cholera in Japan were included in the last report received from the U. S. consular service by the Public Health Service. It would be very surprising, Dr. Williams pointed out, if cholera did not break out in Japan as a result of being carried back by troops who have been fighting in China, where there has been a severe cholera epidemic.

The disease is spread chiefly through infected water and food. It can also be spread by direct contact, which may account for cases reported among policemen sent to aid health authorities in southern Japan but who were cautioned against drinking water from the local supplies.

*Science News Letter, October 16, 1937*

## PLANT PATHOLOGY

**Fungus Disease Threatens Famed Monterey Cypress**

ONE of America's most famous tree species, the Monterey cypress of California, is threatened with extinction by a fungus disease, the cypress bark canker. Under the leadership of the U. S. Department of Agriculture, with the voluntary cooperation of citizens and the aid of CCC workers, heroic efforts are now being made to check it.

The region where first defense efforts are being centered is on the Monterey peninsula itself, where the only living natural stands of Monterey cypress have their home. There are two natural groves of the trees, one on Point Lobos, the other on Cypress Point. Thus far the disease has not reached these natural stands, but it has been rampant among ornamental and windbreak plantings of Monterey cypress within a very few miles of them.

Willis W. Wagener, of the Department of Agriculture, has made a critical study of the fungus and the symptoms that indicate its presence in the trees.

The fungus is known only as cause of this particular disease. It is considered to be a new species, and the technical name *Coryneum cardinalis* has been proposed for it. It gets into the wood of the tree, works its way around through the inner bark and the growth layer, or cambium, until it has the twig or branch completely girdled. A common but not invariable symptom is excessive oozing of gummy balsam.

The disease has now been discovered in planted Monterey cypresses over about two-thirds of the entire state of California. It also attacks the imported Italian cypresses, though less virulently. Laboratory experiments have shown that other conifers related to the cypress may be susceptible, but thus far they have not been found infected under field conditions.

If it is found in an early stage, infecting only a few twigs or branches on a tree, it may be stopped by drastic surgery, removing the wood well below the infected place and spraying the foliage heavily with Bordeaux mixture to kill spores that may be there.

But if the infection is more extensive, the only price for safety of trees still unattacked is to cut down and burn the entire infected tree. Citizens, reached by appeals to make this sacrifice for the sake of one of California's greatest rarities and most beautiful scenic features, have voluntarily destroyed their own plantings by thousands.

The advance of the canker toward Point Lobos and Cypress Point has been checked at least for the present. What the future may bring is, in part at least, a matter of vigilance by scientists and citizens alike.

*Science News Letter, October 16, 1937*

## GEOLOGY

**Meteorite Found in Soviet; Scientists Search for More**

SOVIET scientists are searching for more fragments of a meteorite that fell with a thunderous noise on Sept. 13.

Reports to Tass, the Soviet news agency, state that one fragment weighing 54 kilograms (120 pounds) has already been found in the Tartar Republic. A flaming mass shaped like a globe was also reported to have fallen on the same day in the Belebey District of the Bashkirian Republic.

*Science News Letter, October 16, 1937*

**IN SCIENCE**

## RADIO—ASTRONOMY

**Radio Fades As Great Group of Spots Cross Sun**

A SUDDEN drop in strength of radio broadcast signals accompanied an extraordinarily large group of sunspots that could be seen without optical aid.

The marked radio fadeout was observed by Dr. Harlan T. Stetson, Massachusetts Institute of Technology research associate here. His radiograph showed an 88 per cent. drop of field intensity of signals from a Chicago station on 770 kilocycles.

Nearly fifty earths could be dropped into the sun's area that is included by the compact cluster of 17 well-defined spot centers. The spots formed what looked like a huge blimp, 100,000 miles long and 30,000 miles wide. The total disturbed area was three billion square miles.

*Science News Letter, October 16, 1937*

## PUBLIC HEALTH

**Infantile Paralysis Hits New Area Despite Decrease**

THE 1937 outbreak of infantile paralysis continued on the decline throughout the United States during the week ending October 2, but, even while on the downward grade, struck forcibly into new areas, the U. S. Public Health Service revealed.

Six hundred and three cases of the dread childhood disease were reported during the week as against 703 cases the week before. This was the second successive week to record a drop, health officers stated.

But the state of Colorado, which the previous week reported only nine cases, jumped last week to 31. High for the nation was still Illinois, with 72 new cases of poliomyelitis, as against 66 the week previous.

Other states in which the outbreak was considered fairly extensive were: New York, 45; Michigan, 44; Ohio, 40; Wisconsin, 34; Pennsylvania, 31; California, 30.

*Science News Letter, October 16, 1937*

# EN FIELDS

ARCHAEOLOGY

## Pictographs on Dagger Clue to History of Writing

A FURTHER stage in tracing the origin of our alphabetic system of writing is revealed in discoveries from the site of ancient Lachish, in Palestine.

A copper or bronze dagger made certainly not later than 1600 B. C., is now on view at the Wellcome Research Institution, London. It is one of the relics of the prehistoric and pre-Jewish period in Palestine, which have been obtained on the mound site of Tell Duweir, 18 miles southwest of Jerusalem, identified with the ancient Lachish, which is being excavated by the Wellcome Marston Archaeological Research Expedition to the Near East.

Antiquities obtained in the season 1936-7 are now on view, and among them is this dagger, which although found three years ago, has only recently been cleaned by authorities of the Museum of Antiquities in Jerusalem. It is lent for exhibition by the Government of Palestine.

When the dagger was cleaned a little while ago, it was found to bear four signs arranged vertically. These evidently form an inscription in pictographic script, in which the meaning is conveyed by pictures, each representing a word or idea. One of the four signs is a beautifully engraved representation of a man's head in outline. This is the second sign in the vertical line. Immediately below is what is apparently a snake. The remaining two signs, first and last in the line, have not yet been made out.

There is no clue to the meaning of the inscription, but it is probably a declaration of ownership showing the owner's name, or possibly a dedication.

Interest of the inscription lies in the fact that it shows the earliest stage in an ancient system of writing, which was developing quite independently of the hieroglyphic script of Egypt and the cuneiform, or wedge-shaped, writing of Mesopotamia. By 1600 B. C. both these systems were fully developed; but in Palestine development went on quite independently in the direction which came ultimately through the system invented

or improved by the Phenicians, to our modern alphabet.

It is now possible to trace the more important stages in development of our alphabet, though the sequence is not yet complete.

First comes the pictographic script from Lachish, just found.

Then the form shown on inscriptions found by Sir Flinders Petrie in the Sinai Peninsula some years ago, in which the picture has broken down into a sign, but in which it is still possible in most cases to make out what was the picture from which the sign was derived.

Then we come to the inscriptions on bowls of the 13th century B. C. found at Tell Duweir in which the signs have developed still further—so much so, in fact, that not all have yet been identified. These Tell Duweir signs seem to stand half-way between those of Sinai and the early Phenician, from which the early form of the alphabet developed.

*Science News Letter, October 16, 1937*

GEOGRAPHY

## Scientists at North Pole "Bedding" Down for Night

By I. PAPANIN

Leader of Soviet Scientific Expedition to the North Pole (Through Tass)

DURING the last few days we have been energetically preparing to meet the polar night. We have drawn eider-down covers over our main living tent and in order to preserve more warmth within, have strewn the tent edges with snow. It immediately became warmer in the tent, 44.6 degrees Fahrenheit, while outside the thermometer showed only 17.6 degrees Fahrenheit. On September 10 we completed the construction and equipment of our new kitchen, the walls of which are made of ice. There is a common roof over both the kitchen and the living tent; wind and snow can not penetrate into the kitchen.

On September 12 we lit the kerosene lamp for the first time. It will burn until February.

We often encounter storms and strong winds. We are all in excellent mood and are not disturbed by the advent of the polar night. In case of future necessity, we are stowing away on three sledges supplies of provisions, fuel, clothing and tents; in the event of sudden jamming of the ice or the appearance of large crevices we shall be able to move to another place without loss of time.

*Science News Letter, October 16, 1937*

MEDICINE

## Nicotinic Acid May Be Pellagra Preventive

PATIENTS in certain southern hospitals suffering from pellagra, serious skin and nervous disorder resulting from a dietary lack, are now being given doses of nicotinic acid to test its pellagra-curing power. (*Journal, American Chemical Society*, September.)

The tests are a sequel to the discovery by C. A. Elvahjem and R. J. Madden, University of Wisconsin agricultural chemists, that nicotinic acid will prevent and cure black tongue in dogs. This disease is generally considered the canine counterpart of human pellagra.

Similar diet tests made on inmates of orphanages and other institutions in the south enabled the late Dr. Joseph Goldberger of the U. S. Public Health Service to prove that pellagra is due to lack of a vitamin found in fresh meat, milk, fresh vegetables and yeast. The vitamin has been variously called B, G, P-P, and now is generally referred to as the anti-pellagra vitamin, to avoid confusion with other vitamins. The disease is characterized by a skin rash and nervous symptoms. Many pellagra patients have become demented as a result of the disease. In the past it has been especially prevalent during hard times in the South, and is sometimes called the "hard times disease," because of the vitamin-lacking diet of salt pork, mush and molasses which the poor people lived on at such times.

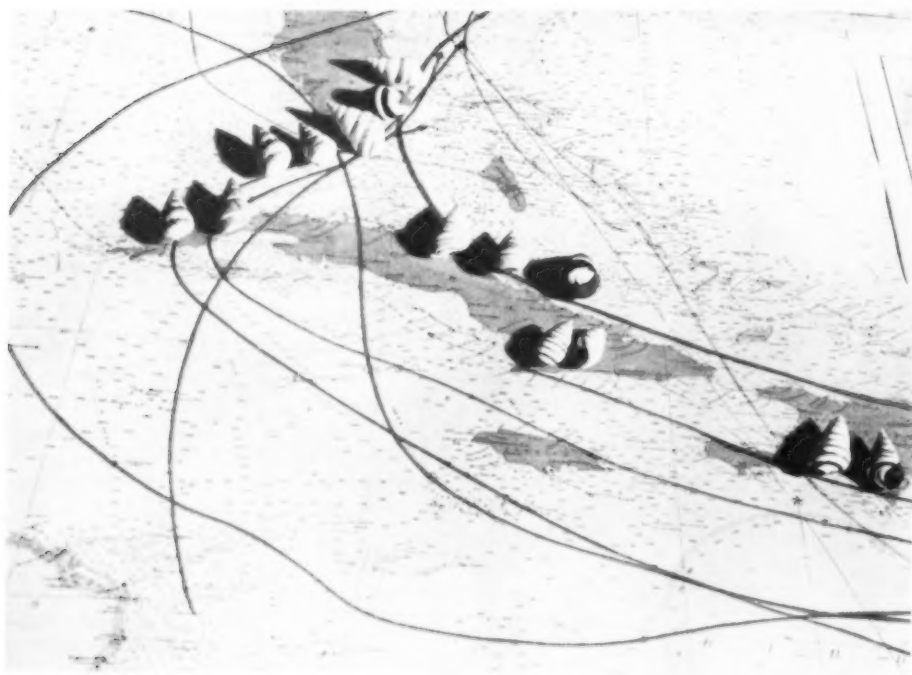
### May be Vitamin

Nicotinic acid, which may turn out to be the anti-pellagra vitamin, is present in small amounts in various plant and animal tissues and is also found in tobacco. This does not mean, the scientists pointed out, that smoking or chewing will prevent pellagra.

In explanation of the effect of nicotinic acid, Drs. Elvehjem and Madden suggested the theory that the acid is present, and therefore probably essential, in one of the enzymes that transfers oxygen from the blood to the cells of the body. Apparently animals cannot build the vitamin from food compounds but must get it ready-made.

The Wisconsin investigators aided by F. M. Strong and D. W. Wooley, have also succeeded in distilling a crystalline form of the vitamin from liver. They call this nicotinic acid amide and find it about as effective as commercial nicotinic acid in curing black tongue.

*Science News Letter, October 16, 1937*



SNAIL WEATHER MAP

*Snails, despite their reputation for slowness, move a mile a minute or faster when a hurricane snatches the leaves they are on and whirls them through the air. This map drawn to show the distribution of Cuban land snails shows that they follow the hurricane pathways.*

MALACOBIOLOGY

## Cuba Land Snails Travel On Wings of Hurricane "Air Line"

**Young Snails Cemented to Leaves Tossed on These Aircraft for Hundreds of Miles to Florida Shores**

**H**URRICANES, roaring up out of the Caribbean to lash the coasts of Cuba and then turn and spend their force on the Florida Keys, are responsible for certain striking peculiarities in the distribution of animal life of the two regions.

Such is the thesis advanced by Dr. Carlos de la Torre, noted Cuban naturalist and former president of the University of Havana, who was recently in Washington carrying on research in the great landshell collections of the U. S. National Museum.

Dr. de la Torre's special study for more than sixty years has been on Cuban land shells, among them the exquisitely colored genus *Liguus*. These are the houses of tree-dwelling snails found in infinite variety in Cuba, Haiti, and southern Florida.

On the island of Cuba he has found

certain varieties of these shells inhabiting definite, limited areas—and far away, on the Florida Keys and the tree-covered "islands" of the Everglades, he has found the same unmistakable varieties repeated.

This poses a rather tough biological riddle. Those hundreds of miles would be a terrific journey for snails, even with many centuries allowed for the trek. There is also the wide salt-water barrier of the Florida Strait, which the land-snails could never swim. And finally, why the total lack of representatives of any given variety, between the Cuban habitat and the home in Florida?

Only with the aid of mighty winds could these snails have made the long leap from island to peninsula, thinks Dr. de la Torre. Young snails secrete a cement with which they fasten themselves firmly to leaves. Such snail-bearing

leaves, wrenched from the trees in a hurricane, can be carried scores of miles, serving as aircraft for their involuntary little migrants. Those that fall into the sea are lost, but those that fall into congenial environment on shore can proceed to establish colonies of their species, far from the old home.

To clinch his argument, the Cuban scientist has taken a map of the region around Cuba and lower Florida, and set down shells from each of the twin Cuba-Florida colonies in their appropriate locations. On the same map were traced the paths of historic hurricanes. It was found that in practically every case the separated shell colonies in Cuba and Florida were on one or another of these hurricane highways. If not absolute proof, it is at least exceedingly striking evidence for the validity of Dr. de la Torre's hypothesis.

Dr. de la Torre has had one of the longest careers as an active scientist that can be claimed by any man now living. Son of a college president, he did his first college teaching at sixteen, and he is now in his eightieth year. He has been honored by many leading scientific organizations in the United States and Europe. Yet he has twice suffered exile from his native land because of his activities as a patriot. Each time, however, changing conditions have permitted him to return to his home with honor.

Dr. de la Torre is at present working with Dr. Paul Bartsch of the U. S. National Museum, and the two men expect to publish a number of scientific papers together.

*Science News Letter, October 16, 1937*

MEDICINE

## Caring For Child After Infantile Paralysis

**P**REVENTING crippling, deformity and disability is the big job that now faces parents and physicians of children who suffered an attack of infantile paralysis during the epidemic this year.

This preventive work must be started as soon as paralysis appears. By paralysis is meant "any recognizable degree of weakening in muscle strength, and not necessarily a total or even an extreme loss of power," one authority explains.

The first step in the preventive work is to keep the patient at rest and to prevent, by suitable braces and supports, the stretching of weakened muscles. This is most important. If the patient tries to walk or use his arms and legs too soon,

the stronger muscles will pull the weak ones out of shape and the deformity will be worse and harder to correct.

Muscle training or reeducation should not be started until pain or tenderness in the muscles has disappeared. After all tenderness has gone, the physician will make a careful examination to detect which muscles are affected. Then he will prescribe the exercises for training and strengthening the affected muscles.

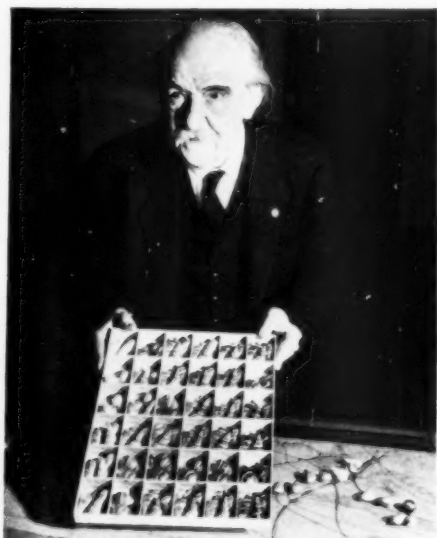
### Nerve Cells Destroyed

In infantile paralysis, certain nerve cells supplying a muscle are destroyed. Those that are left are not used to working together and do the job badly and without coordination. By proper exercises these nerves can be trained to work together with precision. The exercises not only improve the coordination of the nerves but improve the nourishment of the muscle fibers.

Muscle training should be done only under the direction of a trained person who understands muscle function. It should be carried out gradually. Over-fatigue must be guarded against. Swimming does not take the place of localized muscle training. Exercises can be done more pleasantly and easily under water but the same exercises done on a table will produce equally good results.

*Science News Letter, October 16, 1937*

At the recent children's festival in Moscow, the zoo gave young visitors 15,000 "live presents" including parrots, squirrels, and fox cubs.



DR. CARLOS DE LA TORRE

*This Cuban naturalist has accounted for the presence of Cuban land snails in Florida.*

### SURGERY

# Delicate Surgical Operation Enables the Deaf to Hear

**Only One Type of Deafness, Otosclerosis, Is Improved And Only the Skilled Can Undertake New Technique**

**A** DELICATE surgical operation which promises the seeming miracle of making the deaf hear again has been reported by Prof. Maurice Sourdille, of the School of Medicine at Nantes, France, to the New York Academy of Medicine in New York.

The feat has been accomplished by special technics developed by Prof. Sourdille. The new operation will not bring hearing to every deafened person. Even those shown by careful tests to have a hearing defect suitable for correction by this operation can not hope to have the operation performed at present.

Much study of the method and of results so far accomplished are necessary before the operation will be performed universally on a large scale. This caution was made perfectly clear by both Prof. Sourdille and Dr. Edmund Prince Fowler of New York, who acting as chairman of the meeting, introduced Prof. Sourdille.

One of the chief obstacles to immediate application of the new technic on large numbers of patients is the difficulty of performing it. Prof. Sourdille uses both magnifying glasses and microscope in this operation. Complete and permanent loss of hearing and even death may result if the surgeon has not the necessary skill. The operation must be performed in three or four stages, several months apart, in order to lessen this danger, and the patient must remain in a hospital in order to have the wound dressed every day.

Another obstacle is the difficulty of selecting suitable cases. The operation is designed to relieve deafness due to otosclerosis, the condition in which hearing is lost because of bone formation in the opening into the inner ear. This prevents the passage of sound waves from the outside to the nerves of hearing in the inner ear.

Prof. Sourdille's operation provides a new circuit for the sound waves. He cuts a hole through the bone into the inner ear to provide a substitute passage for sound in place of the one

blocked by the abnormal formation in otosclerosis.

This has been done before by other surgeons, and the patients heard again, but the restored hearing was often not permanent. It lasted for a few days or at most months, because the new opening closed up. To overcome this difficulty, Prof. Sourdille has devised a method of covering the new opening with a flap of scar tissue obtained from the ear canal. These procedures permit the sound waves to go through to the nerves of hearing but keep the new opening from closing. Some of the patients operated upon by Prof. Sourdille have retained the improvement in hearing for as long as eight years, which is the longest interval since he performed the first successful operation by the new technic.

In properly selected cases good results can be expected in from 70 to 80 per cent., Prof. Sourdille said. No other method, either surgical or medical, has ever before been so successful in maintaining restoration of hearing in proved cases of otosclerosis, it was pointed out.

This condition of abnormal bone formation in the inner ear exists in 1 out of every 20 adults. Less than one-fourth of these, however, are deafened by the condition. Not all otosclerosis patients are deaf because of the otosclerosis. Other defects which may exist along with the otosclerosis are responsible for the deafness in some of the cases. It was pointed out that treatment which restores hearing is sometimes effective because it clears up these other conditions. Consequently physicians, although impressed by Prof. Sourdille's results, are inclined to temper their enthusiasm with caution. Patients are warned not to insist on the operation unless tests show they will benefit from it, and unless skilled surgeons are available.

More important, perhaps, than the benefits received by the 140 patients whose hearing was improved by Prof. Sourdille is the fact that his work opens a new field of research into the causes of otosclerosis. Some of his results sug-

gest that the old theories of the cause of the condition do not correspond with the facts. Much new study will be necessary to finally determine the causes of otosclerosis, but when these are advanced, new methods of treatment and even of prevention may be hoped for.

Prof. Sourdille, who was awarded the Croix de Guerre for his four years' service with a surgical unit of the French Army during the World War, has labored for twelve years, in the face of great discouragement, to perfect his new surgical technic. He has changed the picture of hopelessness for many patients. No other medical or surgical treatment has given heretofore such a hopeful outlook.

*Science News Letter, October 16, 1937*

## From Page 247

ther blessed by the presence of a full moon, which enveloped the canyon in a pattern of silvery light and deep shadows and added greatly to its sense of awe and mystery.

We had a visit from a coyote, which probably smelled our campfire, for shortly after the rainstorms we found a fresh track of the animal in the mud.

Yet in spite of the apparent comings and goings of animals such as the deer, Shiva Temple, carved out on its south side by the Colorado River and on the north side by rock falls and erosion, is a separate world to the small animals isolated from the mainland.

Physical separation from the canyon rim and environment obstacles between the top of Shiva and the rim of the canyon are the two types of barrier which can and do stop small animals like mice and other rodents from crossing to and fro. The physical inaccessibility of this sky island is sufficient to prevent the passage of many land animals.

Climbing rodents such as chipmunks can scale the cliffs with ease and they constitute no physical barrier to them, but the environmental obstacles are effective.

Any animal leaving Shiva to cross to



### BABY BOA BOLTS BUNNY

*This is no alliterative joke. Mexicans value young boa constrictors because the snakes eat insects and rodents. When this baby ate a rabbit intended for Mama Boa, its owner sent it to a doctor and X-ray apparatus in California to make sure the rabbit was following the proper pathway of digestion. This X-ray photo was the result.*

the North Rim by way of the saddle must drop down 1,100 feet into a distinctly different type of environment, which may be not only unattractive but actually hostile to it. As long as food and living conditions on Shiva are attractive to one of these small rodents capable of climbing up and down the physical barrier there is no incentive for it to leave, especially if the only highway open to it is less attractive than the place it is leaving.

Such a barrier as this environmental one is for many kinds of animals just as much a hurdle as a broad expanse of water is to an animal that cannot swim.

We rather expect, therefore that the study of the mammal we have collected on Shiva will show that these two types of barriers have left their impress on the character of the animals found on the plateau.

### Mark of Isolation

The paleness is a mark of isolation. If darker animals could invade the main-land, they would dilute the interbreeding tendency toward lighter coloration.

dency toward paleness has apparently not been so diluted.

The beginning of our first day atop Shiva, Friday, Sept. 17, did not find us settled for our work by a long shot, but by sundown we were fairly well organized.

When we took stock after a rather meager breakfast out of camp, we found we had exhausted our water. Our greatest need was water. We started up to the camp on the saddle, where we had established the day before.

### Shouted from Pinnacle

It was on this morning that I shouted down from a pinnacle some fifteen hundred feet in an airline from the camp that we had not a drop left. Superintendent Tillotson was talking to the South Rim over his portable radio transmitter at the time.

And, I am told, the two-way conversation between us was picked up by the microphone. I do know that press reports for that day declared that Dr. Anthony had sent down from the cliffs above "plaintive calls" for more water.

This day saw the termination of most

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of our transportation difficulties, for Wood, who had led the climbing party, was on his way out to start the parachute as a vehicle for supplying us with food and water.

The first parachute was landed on Shiva shortly before six o'clock that evening. It arrived while we were all at camp and caused some confusion because the packers had just arrived with their last loads for the day.

George Andrews and I dropped everything to run for the open spot which we had picked as the landing place for the 'chutes and which we had nicknamed the "Shiva Airport."

### Successful Landing

We had a pile of dry brush ready to fire as soon as the plane, whose motors we could hear, came into sight. Green pine boughs were to be thrown on this and the dense smoke would tell the pilot the direction of the ground wind. But before we could get this fire more than started, the bright red plane of Miss Andrews flashed over the rim, crossed Shiva once, wheeled to return, and on the second crossing, let go the first 'chute.

We saw the package drop through the trapdoor in the fuselage and then in a second the white billowy folds of the parachute puffing out as it caught the wind. The first parachute landing of "freight" on Shiva was one hundred per cent. successful. We had no trouble retrieving the cargo of food.

The white silk 'chute was hung in a

low juniper, but was not torn and with a little care we succeeded in getting it to the ground and safely stowed into a small bundle for return to the outside world and possible use once more in the future.

By a coincidence, the juniper limb I pulled down to free the 'chute dislodged a headless mouse which fell into my hand. Perhaps the remnant of a hawk's or owl's repast was an omen of the dozens of mice we were to catch.

While we were disposing of this first 'chute and bringing the provisions back to camp, Miss Andrews and Wood flew back to the Grand Canyon Airport on the South Rim to take on a second load—water—for Shiva.

Before we were ready for them, however, back came the drone of the motor and this time the package which was dropped did not check its flight, but hit Shiva like a bomb, while a partially opened 'chute fluttered down out of sight behind the trees like a wounded bird. A knot had slipped and 'chute and water can had parted company.

### Lost for Week

We didn't locate the ten gallon dairy can until the next day; it was a week before we found the parachute itself.

In the first 'chute load were the dozen eggs, packed just as they came from the grocer.

In case anyone is interested in what the well-equipped expedition will land from the air, we had items ranging all the way from substantial and necessary tinned meat, milk and vegetables to the unexpectedly luxurious features such as eggs, tobacco and a package of cheeses in individual portions.

These last were a last-minute thought by Wood, who can probably recall many a mountain-climbing expedition when he would have liked some of the little things in life and intended to surprise us when we first peeked under the lid of the tin case. I admit, we were sur-

prised, but we went begging, how one pipe smoker in the middle of a day, a slave of habit, and, despite the fact that he couldn't be choosy. The first loads were landed and since they included a carton of provisions and two gallons of water, we were assured that the supplies for the rest of our stay were safe.

Just to be on the safe side, however, the packers brought with them each day a two-gallon canteen of water. Even

so we didn't have enough to wash our camp dishes or our hands and faces. Fortunately for our senses of decency (skinning animals and handling traps is not the cleanest operation in the world) the three-day period of rainy weather set in on Sept. 20 and we gathered five gallons of water from shallow rock pools in collapsible canvas buckets we had brought with us for water storage.

### Mosquitoes

Insect life on Shiva had its interesting as well as annoying features. I was very much surprised the first night in our camp to hear high-powered mosquitoes flying about my ears. There were only two of them but they sounded large and as though they meant business.

Apparently, however, they were out of practice in biting humans, for not only was I not bitten, so far as I can discover, but I caught one landing on me only once. I finally fell asleep waiting to see if one would settle down on my face that evening.

Later I saw one of these at daytime in the tent and although it escaped before I could catch it I saw that it was much larger than the ordinary mosquito and very dark in color. It might seem strange to find mosquitoes in a region without water, but it must be remembered that these insects may fly or be blown a considerable distance from the water which hatches them.

Another bedtime visitor was a large black ant which every night (I was sleeping on the ground) persisted in coming into my sleeping bag.

There were never more than one or



### HOW HE REALLY LOOKS

Without the aid of X-ray eyes the baby boa would look like this 6-month-old specimen at the National Zoological park.

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two at a time, but they seemed unable to find a spot that satisfied them, and kept wandering up and down the length of my bed. I came to appreciate the significance of the saying, "I have ants in my pants."

A typical day for us began the afternoon before, when we set out a string of traps, usually fifty to seventy in number. These were baited with a bait made up of rolled oats, bacon, peanut butter and raisins, a banquet certain to suit the most fastidious rodent appetite and good enough for humans if we ever ran out of food.

While plain rolled oats would undoubtedly have attracted many rodents to the traps, and during these days of the rising cost of living the ingredients of our special bait would seldom appear on the average mouse menu, we felt that special circumstances justified the best for Shiva. We wanted to be more certain of catching rodents, mice among them, than the average housewife is.

Incidentally, this bait was very attractive to ants and this meant that fresh bait could be put out only well on in the afternoon.

Our traps were placed in all the different types of environment atop Shiva—under the edge of the rim, among the rocks, along fallen logs, under the yellow pine, and in clumps of brush scattered through the grassy areas in the more open portions of the plateau.

### Plentiful Rodents

Although a museum expedition usually runs from 100 to 200 traps a night and I had almost the latter number with me, it was not necessary to use such a large number because of the plentiful numbers of rodents atop the plateau. By constantly shifting the traps in order to test out each habitat we have good grounds for believing that we secured a representative sample of the mesa's animal life.

At daybreak George Andrews and I

made the rounds of our trap lines, removing specimens before the ants had mutilated them too badly. There is a variety of large black ant on Shiva which will very soon ruin as a specimen any small rodent left long in a trap.

Breakfast and a day of skinning followed.

As soon as we had gotten a large enough number of the common things and could let up on the daily routine of skinning and thus have a little leisure, we started to hunt with a shotgun, take photographs, turn over rocks and stones looking for any animal life that might be under them, and otherwise explore the possibilities of the plateau.

Hunting with the shotgun was not as productive of specimens as might be imagined. Chipmunks are very abundant on the mesa, but also very shy. They were usually in full flight when we saw them.

### Mammals Timid

In fact, this timidity and wildness was characteristic of all the mammals. Cottontail rabbits (which we went after without much success to add to our food supply toward the end when we ran low on meat) and rock squirrels were very seldom in view long enough to catch through the gun sights. Usually the animals made at once for the rim and disappeared down the slope where there was an abundance of cover amid the fallen rocks.

It may seem strange that animals which had never seen man as must be the case on Shiva would be so fearful of him. Very often where animals have not known man, such as on certain oceanic islands, the visiting naturalists have found their tameness so striking as to deserve notice.

I can offer as an explanation of the timidity of the Shiva animals only the fact that Shiva is the happy hunting ground for several kinds of hawks and probably the mammals have learned to fear anything that is moving.

Some of the chipmunks, however, were a little tamer. If one had the patience to sit quietly near the rim of the mesa soon the chipmunks would come out and go about their various ways. One of those ways was toward one variety of cactus which had a large red fruit. The chipmunks' cheek pouches were full of the hard seeds of this desert plant.

During the first day, McKee and I, troubled with thirst, had tried them. They are quite palatable, but are a tremendous amount of work to prepare,

removing the spines. One has to practically peel the entire fruit, which is about as large as a man's thumb. It was a lot of work for each mouthful of the red sweet pulp.

While we were completing the survey of Shiva the climbing party was organizing and preparing to climb Wotan's Throne, a detached mesa similar to Shiva. Wotan's Throne lies just off Cape Royal on the North Rim. We expected a much more difficult climb because the ridge which connects its base to the mainland is cut by several deep fissures too wide for man to cross. (See front cover. This picture and that on page 247 are official Park Service photographs.)

The climbing party reached the top of Wotan but it was away three days in accomplishing the task. Wood reported that they had met such difficulties over the cliffs that he believed it would be inadvisable to try to get water, provisions and collecting equipment onto Wotan by way of packers.

So when we came down from Shiva we decided that more was to be gained from coming back to the Museum immediately to check the work already finished rather than try an immediate ascent of Wotan's Throne.

Wotan's Throne should be and doubtless will be studied some day, whether by me or someone else makes no scientific difference. Such a study may well find that not only is Wotan's Throne different from the North and South Rims of the Grand Canyon, but that it is different from Shiva Temple as well.

Gained as a result of the expedition is the knowledge that there is one less blank spot on the scientific map of the world. Gained, too, are possibly some new varieties of mammals and some further idea of how much evolution has taken place during the 20,000 or so years that Shiva Temple has stood apart in lonely grandeur from the North Rim of the world's mightiest and most awe-inspiring hole—the eight-million year-old Grand Canyon of the Colorado River.

*Science News Letter, October 16, 1937*

Bulgaria plans to build 250 maternity hospitals during the next few years, in an effort to eliminate heavy mortality among newborn infants due to present lack of sanitary facilities.

Germany's compulsory health insurance system has a set-up including more clerks and officials than physicians.

A great, unbroken forest once covered Africa, so a bird specialist deduces from the distribution of birds there.

## Books

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TAXONOMY

## NATURE RAMBLINGS

by Frank Thone



-ptera

**S**CIENTIFIC names of large general groups of insects (orders,) you may possibly have noticed, often end with the suffix *ptera*. Thus we have orthoptera, hemiptera, neuroptera, lepidoptera, diptera, coleoptera, hymenoptera, and many others.

Some of these look like jawbreakers, and the reaction of the average person is likely to be: "Well, it's all Greek to me!" and give it up. It really is all Greek; but you needn't give it up. A little dissection of the words proves to be almost as interesting as an examination of the insects themselves.

*Ptera* is a Greek word meaning wings. Each order of insects has some special peculiarity about its wings that is common to all members of that group but is not shared by any other. By their wings shall ye know them, is the classification rule of entomologists.

Thus, *orthoptera* means having straight wings. Members of the order Orthoptera include grasshoppers, katydids, crickets, and other insects that have straight, simple wings which they never fold. Straight-wings is a very appropriate name for their group.

*Hemiptera* means having half-wings. Members of this order, including squashbugs, boxelder-bugs, giant water-bugs, and cicadas (which are usually mis-called "locusts") have front pairs of wings shortened to about half the length of the back pair, which are their real flying organs. Again an appropriate name.

*Neuroptera* means nerve-wings, a reference to the prominent ribs or nerves in the transparent wings of members of this group. *Lepidoptera*, the zoological name of the butterfly-moth group, means scale-wings, and is a reference to the microscopic scales that cover their

wings and are responsible for their gorgeous colors and patterns.

Flies, mosquitoes, craneflies and their many relatives have only one pair of wings instead of the two pairs possessed by most insects. They are accordingly called Diptera, which means two-wings. The suppressed pair of wings is represented by a pair of vestiges in the form of tiny knob-ended rods.

Beetles have forewings that form solid sheaths over their hindwings, usually completely covering them. The Greek word for sheath is *koleos*, and the beetle order is known to entomologists as the Coleoptera, or sheath-wings.

The great order of insects that includes bees, wasps, and ants have little hooks ranged along the meeting edges of their fore- and hindwings, uniting them firmly for more efficient flight. The Greek word *hymen* is familiar to all of us, in its sense meaning marriage, a union. These insects with united wings are therefore called Hymenoptera.

*Science News Letter, October 16, 1937*

## SEISMOLOGY

## Two Earthquakes Recorded Near Mexican Coast

**T**WO earthquakes in two days in the southern Mexican region, was the record of Tuesday and Wednesday, Oct. 5 and 6. Seismologists of the U. S. Coast and Geodetic Survey studied data on the two shocks, as transmitted by wire through Science Service from a number of observatories.

The Wednesday quake was somewhere in the state of Guerrero, with its epicenter located in latitude 18 degrees north, longitude 99 west; both figures approximate. Time of origin was 4:47.2 a. m., eastern standard time.

Tuesday's tremor began at 1:21.2 a. m., eastern standard time, in latitude 22 degrees north, longitude 108 degrees west. This is a point about 180 miles off the Pacific coast of the Mexican state of Sinaloa, and about 100 miles southeast of the tip of the Lower California peninsula.

Reports were sent to Science Service by the stations of the Jesuit Seismological Station at St. Louis University, Georgetown University, Fordham University, and Canisius College; Pennsylvania State College, the University of California, the University of Montana; the Dominion Meteorological Observatory, Victoria, B. C.; and the stations of the U. S. Coast and Geodetic Survey at Chicago, Ill., and Tucson, Ariz.

*Science News Letter, October 16, 1937*

## PALEONTOLOGY

## Early Primate Fossils Collected in Northwest

**A** WOODLAND Paradise of 70,000,000 years ago, long before there were any human Adams and Eves to inhabit it, has been explored by scientists and is described in a new Smithsonian Institution report.

The great forest, now represented only by fossil remains of plants and animals, existed just east of the Crazy Mountains in central Montana, near the beginning of the Age of Mammals. Collections were made there over a period of nearly thirty years, by three successive paleontologists, Albert C. Silberling of the U. S. Geological Survey, the late Dr. James W. Gidley of the U. S. National Museum, and Dr. George Gaylord Simpson of the American Museum of Natural History, who completed the work and prepared the results for publication.

Leading citizens of this lost world of the treetops were the most primitive members of the primate family, the earliest ancestors of the apes, known scientifically as the lemuroids and tarsoids. The only fossil remains of these creatures are teeth and an occasional jawbone. The scarcity of their fossils is possibly due to the animals, having been eaten by crocodiles; only very hard objects, like teeth, could resist their terrific digestive mills. The remains are so fragmentary that the scientists have no definite idea what the animals looked like.

Other inhabitants of this earliest mammalian menagerie included shrews, an order of animals still living, and a long-extinct group known as the multituberculates.

*Science News Letter, October 16, 1937*

Five thousand young seagulls have been tagged with leg bands of red, blue, and yellow, by the Linnaean Society of New York, to trace their migrations.

## ● RADIO

October 19, 5:30 p. m., E.S.T.

COUNTING BIRD NOSES—William Vogt, Editor of "Bird Lore".

October 26, 5:30 p. m., E.S.T.

ANCIENT CHINA—Carl W. Bishop of the Freer Gallery of Art.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

# •First Glances at New Books

## Physics

**THERMODYNAMICS**—Enrico Fermi—*Prentice-Hall*, 160 p., \$3. This elementary treatise by the professor of physics at the University of Rome, Italy, is an outgrowth of his course of lectures given at Columbia University during the summer of 1936.

*Science News Letter, October 16, 1937*

## Agricultural Engineering

**PLANS OF FARM BUILDINGS FOR NORTHEASTERN STATES**—U. S. Dept. Agriculture—*Govt. Print. Off.*, 128 p., illus., 30 c. This highly practical book of plans and perspectives tells how to build not only houses and barns but such accessory structures as refrigerators and spring-houses, cattle chutes and pigsties, and even how to lay out a baseball diamond.

*Science News Letter, October 16, 1937*

## Ethnology

**CHINA AT WORK**—Rudolf P. Hommel—*John Day*, 366 p., illus., \$5. Even if China were not "news" today, this book would still hold the interest of almost any one who picked it up. It describes—with fascinating detail and pictures on almost every page—how the Chinese make their homes and their candles, their straw footwear and bulky spectacles. Tools are the theme of the book.

*Science News Letter, October 16, 1937*

## Biology

**A TEXTBOOK OF GENERAL BIOLOGY** (2d ed.)—E. Grace White—*Mosby*, 667 p., illus., \$3. A new and revised edition of a successful textbook.

*Science News Letter, October 16, 1937*

## Sociology

**RECENT TRENDS IN RURAL PLANNING**—William E. Cole and Hugh Price Crowe—*Prentice-Hall*, 579 p., illus., \$3.50. A handbook for workers in this field and an informative volume for the layman by two members of the faculty at the University of Tennessee.

*Science News Letter, October 16, 1937*

## Sociology

**RESEARCH MEMORANDA IN THE DEPRESSION**: BULL. 27: CRIME—Thorstein Sellin, 133 p., BULL. 28: EDUCATION—The Educational Policies Commission, 173 p., BULL. 29: FAMILY—Samuel A. Stouffer and Paul F. Lazarsfeld, 221 p., BULL. 30: INTERNAL MIGRATION—Warren S. Thompson, 86 p., BULL. 31: MINORITY PEOPLES—Donald Young, 252 p., BULL.

32: RECREATION—Jesse F. Steiner, 124 p., BULL. 33: RELIGION—Samuel C. Kincheloe, 158 p. BULL. 34: RURAL LIFE—Dwight Sanderson, 169 p. BULL. 35: SOCIAL ASPECTS OF CONSUMPTION—Roland S. Vaile, 86 p., BULL. 36: SOCIAL ASPECTS OF HEALTH IN THE DEPRESSION—Selwyn D. Collins and Clark Tibbitts, 192 p. BULL. 37: SOCIAL ASPECTS OF READING—Douglas Waples, 228 p., BULL. 38: SOCIAL ASPECTS OF RELIEF POLICIES—R. Clyde White and Mary K. White, 173 p., BULL. 39: SOCIAL WORK—F. Stuart Chapin and Stuart A. Queen, 134 p., *Social Science Research Council*, \$1 per vol., \$10 set. A series designed to stimulate research on effects of the great economic depression, each prepared by experts in their particular field.

*Science News Letter, October 16, 1937*

## Paleontology

**THE FORT UNION OF THE CRAZY MOUNTAIN FIELD, MONTANA AND ITS MAMMALIAN FAUNAS**—George Gaylord Simpson—*Govt. Print. Off.*, 287 p., illus., 45c See page 255.

*Science News Letter, October 16, 1937*

## Chemistry

**A HUNDRED YEARS OF CHEMISTRY**—Alexander Findlay—*Macmillan*, 352 p., \$4.25. In this volume, the professor of chemistry at the University of Aderdeen, rounds up the chemical progress of the last century. While written so that it is comprehensible to an intelligent layman, it has the virtue of serving more advanced students with copious foot notes and specific references from the literature.

*Science News Letter, October 16, 1937*

## Physics

**SOUND**—Arthur Taber Jones—*Van Nostrand*, 450 p., illus., \$3.75. This textbook on sound, by the professor of physics at Smith College, is designed for second-year students who have already had an introductory course in physics. It is suitable for physics majors and for engineering students. A liberal use of footnotes with references to the literature is extremely helpful.

*Science News Letter, October 16, 1937*

## Chemistry

**CHEMICAL LABORATORY MANUAL** (3rd ed.) PREPARED TO ACCOMPANY BOGERT'S "FUNDAMENTALS OF CHEMISTRY," FOURTH EDITION, REV.—L. Jean Bogert—*Saunders*, 142 p., \$1.

*Science News Letter, October 16, 1937*

## Photography

**PHOTOGRAPHIC AMUSEMENTS: INCLUDING TRICKS AND UNUSUAL OR NOVEL EFFECTS OBTAINABLE WITH THE CAMERA** (11th ed.)—Frank R. Fraprie and Florence C. O'Connor—*American Photographic Publishing Co.*, 247 p., illus., \$3.50. Beautifully illustrated, fascinating in content, and including a considerable amount of new material, is this revised edition of a popular book on unusual photographic techniques.

*Science News Letter, October 16, 1937*

## Psychology

**PSYCHOLOGY OF PERSONALITY**—Ross Stagner—*McGraw-Hill*, 465 p., \$3.50. Not a popularly written book, but an authoritative one on a subject of very wide interest.

*Science News Letter, October 16, 1937*

## Electricity—Juvenile

**ELECTRICAL OCCUPATIONS**—Lee M. Klinefelter—*Dutton*, 227 p., illus., \$2. Written in a conversational style reporting talks of a boy named Bill and his father, this book describes the fields of electrical engineering.

*Science News Letter, October 16, 1937*

## Economics

**OUR CITIES: THEIR ROLE IN THE NATIONAL ECONOMY**—National Resources Committee—*Govt. Print. Off.*, 88 p., maps, 50 c. A broad survey of the many problems that concern our urban population, full of facts, in text and diagrams, that point toward recommendations for legislation and other action.

*Science News Letter, October 16, 1937*

## Finance

**INVESTMENT TRUSTS AND FUNDS FROM THE INVESTOR'S POINT OF VIEW**—E. C. Harwood and Robert L. Blair—*Amer. Inst. for Econ. Research*, 102 p., \$1. Presented as a guide for the average man who has a few hundred dollars or more to invest.

*Science News Letter, October 16, 1937*

## Engineering

**THE STORY OF TUNNELS**—Archibald Black—*Whittlesey House*, 245 p., \$2.75. Subways, underwater tunnels, tunnels through mountains, freight tunnels, vehicular ones, water pipelines run through solid rock or quicksand, tunnels that the Romans built—right up to the Lincoln Tunnel being pushed below the Hudson River from Manhattan to Weehawken. Popularly written with many illustrations.

*Science News Letter, October 16, 1937*